

CLAIMS

What is claimed is:

1. A method of forming a plurality of bumps on a wafer having an active surface, wherein the wafer further includes a plurality of bonding pads formed on the active surface and a passivation layer formed on the active surface that exposes the bonding pads, the method comprising the steps of:
 - forming an under bump metallurgy layer over the active surface of the wafer, wherein the under bump metallurgy layer covers both the bonding pads and the passivation layer;
 - patterning the under bump metallurgy layer so that a residual portion of the under bump metallurgy layer remains over each of the bonding pads;
 - forming a polymer layer over the active surface of the wafer, wherein the polymer layer has a plurality of openings that expose the residual portion of the under bump metallurgy layer;
 - disposing a plurality of solder balls into each of the openings and performing a heating process simultaneously so that the solder balls are bonded to the residual portion of the under bump metallurgy layer temporarily;
 - disposing a flux material above the wafer so as to at least cover the surface of each of the solder balls;
 - performing a reflow process so that the solder balls are bonded to the residual portion of the under bump metallurgy layer; and
 - removing the polymer layer.
2. The method of claim 1, wherein the under bump metallurgy layer comprises an

adhesive layer and a metallic layer formed on the adhesive layer.

3. The method of claim 2, wherein a material constituting the adhesion layer is selected from a group consisting of titanium, titanium-tungsten alloy, chromium, chromium-copper alloy, copper and tantalum.
4. The method of claim 2, wherein a material constituting the metallic layer is selected from a group consisting of nickel-vanadium alloy, titanium nitride, tantalum nitride, nickel, chromium-copper alloy, chromium, copper and palladium.
5. The method of claim 2, wherein a material constituting the solder balls includes lead-tin alloy.
6. The method of claim 2, wherein a material constituting the solder balls includes a lead-free alloy.
7. The method of claim 5, wherein a material constituting the solder balls is selected from a group consisting of lead, gold, silver, copper, magnesium, bismuth, antimony, indium and zinc.
8. The method of claim 1, wherein a material constituting the bonding pads is selected from a group consisting of copper and aluminum.
9. The method of claim 1, wherein the polymer layer is a photoresist layer.
10. The method of claim 1, wherein the polymer layer is a dry film.
11. The method of claim 1, wherein the polymer layer is formed by spin-coating.
12. The method of claim 1, wherein the flux is disposed above the wafer by spin-coating.
13. The method of claim 1, wherein the heating process is performed at a

temperature from about 100°C to 150°C.